

# Bowen School

## Newton, Massachusetts

Safe Routes to School Infrastructure Program



Massachusetts Department of Transportation (MassDOT)  
Office of Transportation Planning

**massDOT**  
Massachusetts Department of Transportation

Preliminary Assessment

September 30, 2010

# 1 Introduction

This Safe Routes to School (SRTS) Infrastructure Assessment for the Bowen School in Newton, Massachusetts is a summary of potential improvements that are intended to make walking and bicycling safer and more attractive modes for children traveling to and from school. This assessment includes recommendations that can either be implemented as part of the Massachusetts SRTS Infrastructure Program or pursued by the City of Newton as part of a future project. This document describes the SRTS program, the travel characteristics of the Bowen School student population, issues related to pedestrian and bicycle access for the Bowen School, and the results of the preliminary assessment effort.

## 1.1 The SRTS Program

The federally funded SRTS program is administered through the Massachusetts Department of Transportation (MassDOT). According to the federal legislation<sup>1</sup> that created SRTS, the program's purpose is:

- (1) To enable and encourage children, including those with disabilities, to walk and bicycle to school;
- (2) To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
- (3) To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

In Massachusetts, the program is composed of two parts: an education / encouragement component and an infrastructure improvement component. *MassRIDES*, the Commonwealth's travel option service, delivers the in-school education and encouragement program for MassDOT.

The infrastructure improvement program is delivered by a consultant team led by TEC, Inc. under contract with MassDOT. The TEC, Inc. consultant team evaluates walking and bicycling access conditions at the school; identifies potential infrastructure projects that would improve pedestrian and bicycle access; and develops designs for a selected set of high priority pedestrian and bicycle access improvements.

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<sup>1</sup> The federal-aid Safe Routes to School Program (SRTS Program) was created by Section 1404 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), signed into Public Law (P.L. 109-59) on August 10, 2005. The SRTS Program provides federal-aid highway funds to state Departments of Transportation (DOTs) in accordance with a formula specified in the legislation. These funds are available for infrastructure and non-infrastructure projects and to administer state Safe Routes to School programs that benefit elementary and middle school children in grades K-8. The federal-aid SRTS Program is administered by the Federal Highway Administration (FHWA) Office of Safety.

## 1.2 MassDOT Policy Support for SRTS

MassDOT policy and practice is strongly supportive of the SRTS program and the infrastructure improvement projects that it makes possible. Key MassDOT policies that support SRTS include:

- *The GreenDOT Policy*, MassDOT's comprehensive sustainability initiative that is designed to integrate environmental responsibility into all areas of MassDOT's responsibilities. GreenDOT is driven by three primary goals: reduce greenhouse gas emissions; promote the healthy transportation options of walking, bicycling, and public transit; and support smart growth development.
- *Complete Streets*, the comprehensive multi-modal design philosophy in MassDOT's Project Development and Design Guide. Complete Streets calls for safe and appropriate accommodation of all roadway users, and an approach to roadway design that works "from the outside in," giving critical early consideration not only to motor vehicles, but also pedestrians, bicyclists, and public transit riders.
- *The Healthy Transportation Compact*, an inter-agency group established by the 2009 Transportation Reform Law that established MassDOT, and led by MassDOT, the Executive Office of Health and Human Services, and the Executive Office of Energy and Environmental Affairs. The Healthy Transportation Compact is designed to promote healthy lifestyles through transportation system design and operations that facilitate walking, bicycling, and other active transportation modes.

These policies are all consistent with and supportive of the SRTS program, which seeks to promote active transportation and healthy lifestyles among the next generation of Massachusetts residents. It is MassDOT's desire that the SRTS program not only create healthy habits that will last a lifetime, but also to help educate school children on the importance of ensuring opportunities for active transportation in the way that we build and operate our transportation system.

## 1.3 The School Assessment Program

Over the course of a three-year period, MassDOT, through the TEC Team, will conduct assessments at up to 50 schools throughout the Commonwealth. The first round of assessments started in April 2008 and covered thirteen schools. Ten schools were assessed in the second round beginning in November 2008. Twelve additional assessments were commenced as part of round three beginning in April 2009. Fourth and fifth rounds of solicitations occurred in March and April 2010, respectively.

In order to receive an infrastructure assessment, a school must be a participant in the education and encouragement program managed by *MassRIDES*, and the school must complete an assessment request. Each assessment request must be accompanied by a municipal letter of support from the City naming a municipal liaison for future coordination. To date, infrastructure assessments have been limited to one per community.

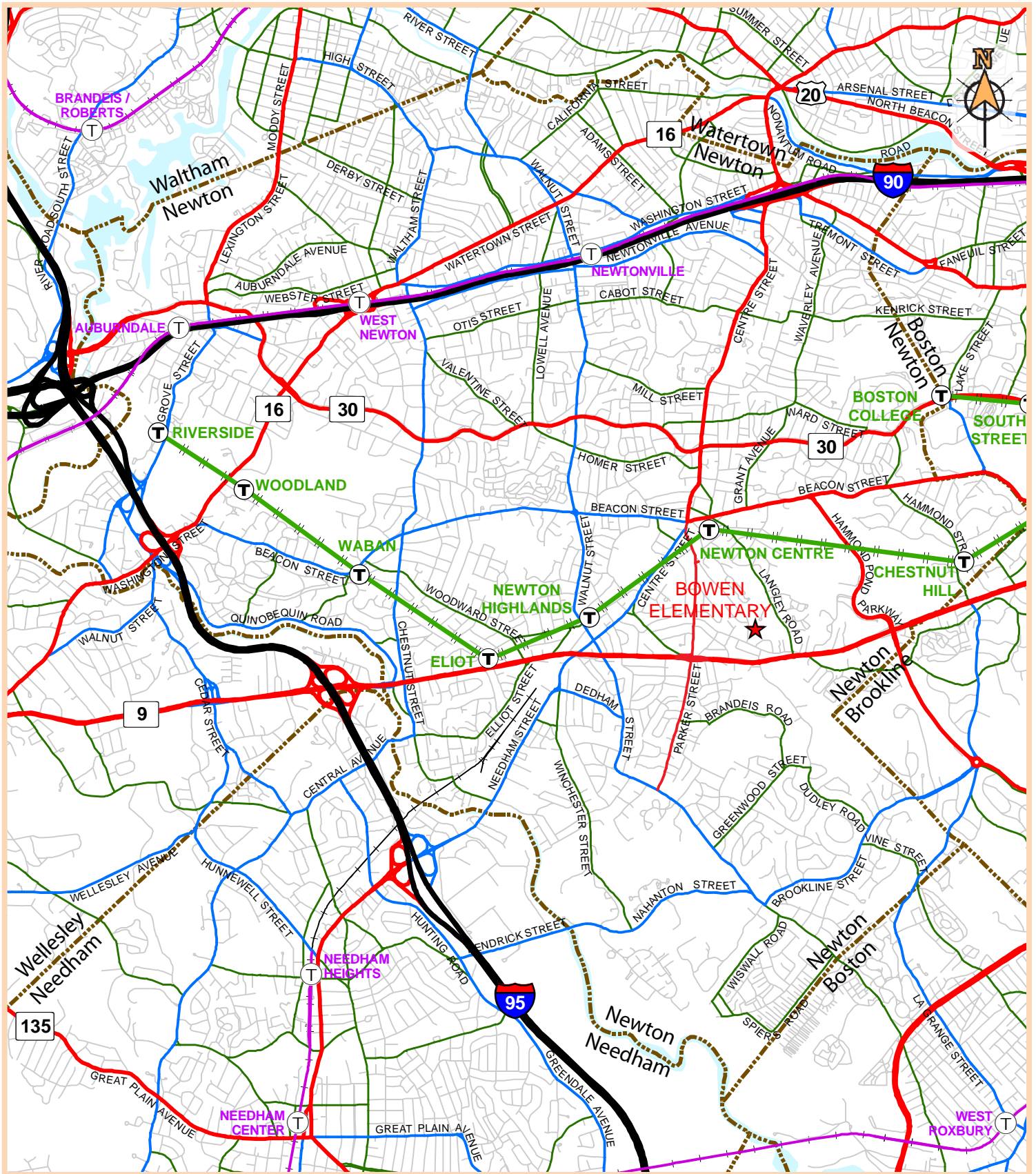
## **1.4 Use of Assessment Recommendations**

Each assessment identifies measures that could improve bicycling and walking conditions. The assessment includes preliminary evaluation of feasibility, safety benefits, likelihood of increasing walking and bicycling, and cost. Based on this preliminary evaluation, several potential infrastructure projects are developed in greater detail for review with the school and municipal stakeholders. After this review, final implementation recommendations are made.

## **2 Bowen School**

The Bowen School is located on Cypress Street, approximately one-quarter mile north of Jackson Street. Figure 1 shows the school's relationship to the network of arterial roadways, which carry heavy traffic volumes that can be a barrier to walking and bicycling. Figure 2 shows the school's relationship to the streets within a one-mile radius of the school. Both graphics are based on Geographic Information System (GIS) files maintained by MassDOT's Office of Transportation Planning.

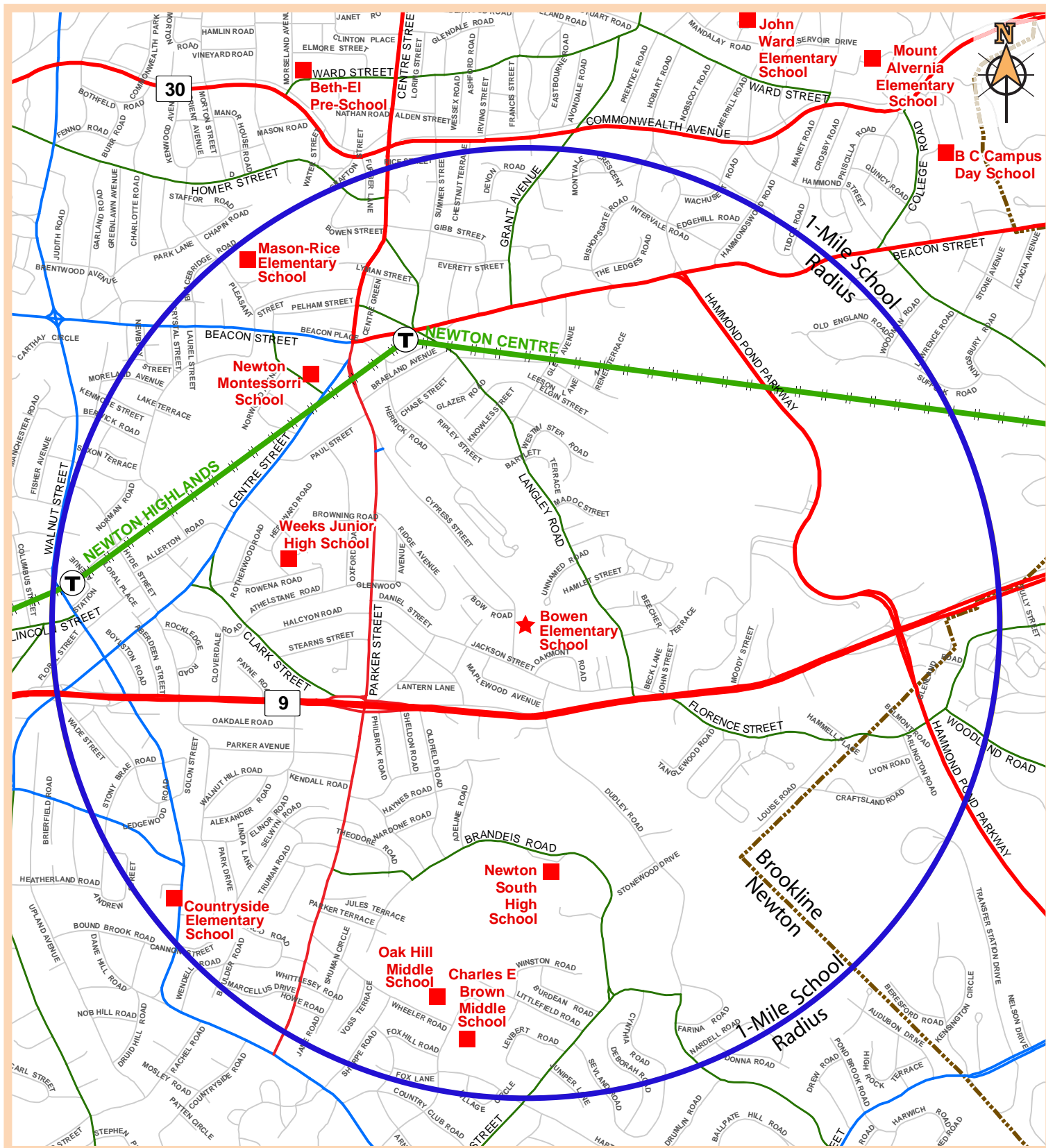
This assessment focuses on the streets immediately adjacent to the school grounds because these are the streets that carry the greatest volume of school-related walking and bicycling trips.



N.T.S.

- |   |   |
|---|---|
| <span style="color: red;">—</span> Arterial Roadway         | <span style="color: gray;">—</span> Unclassified Road         |
| <span style="color: blue;">—</span> Collector - Distributor | <span style="color: brown;">- - -</span> Municipal Border     |
| <span style="color: green;">—</span> Local Street           | <span style="color: purple;">+ + +</span> MBTA- Commuter Rail |
|   | <span style="color: green;">+ + +</span> MBTA- Green Line (D) |

**Figure 1: Map of Newton, MA**



**Figure 2: 1-Mile Street Network & Surrounding Schools**

## 2.1 Completed SRTS School Assessment Request

(As submitted by the City)

School Information		Municipality Information	
School Name	Bowen Elementary	Municipality Name	City of Newton
Street Address	280 Cypress Street Newton Center, MA 02459	Mailing Address	1000 Commonwealth Ave. Newton, MA 02459
Original Contact Name	Dr. Patricia Kelly (Principal 2008)	Contact Name	Clint Schuckel, PE, PTOE
Tel. No.	617-559-9330	Tel. No.	617-796-1024
Email	<a href="mailto:patricia_kelly@newton.k12.ma.us">patricia_kelly@newton.k12.ma.us</a>	Email	<a href="mailto:cschuckel@newtonma.gov">cschuckel@newtonma.gov</a>

School Population Information (2008)										
Grade	K	1	2	3	4	5	6	7	8	Sum
Number of Students	79	81	81	77	63	54	-	-	-	435
Actual number residing within 1 mi of school	57	66	63	55	55	40	-	-	-	336
Estimated number who currently walk/bicycle	23	21	28	22	21	19	-	-	-	134

### Are students bused within 1 mile of the school? Explain if yes.

Some are bused for safety reasons, e.g. dangerous crossing like Route 9. Approximately 13% of students within 1 mile are eligible for busing.

### Describe the potential for increasing walking and bicycling to the school

Bowen serves a residential area in Newton with a dense student population and one of the highest elementary school enrollments in the city. The vast majority of families live within a 1-mile radius with safe walking routes to school on well-maintained sidewalks with supervised major crossings. We seek to encourage more of these families to leave their cars at home with infrastructure improvements that improve pedestrian comfort level and safety along the school route as well as upon arrival to the school.

**Describe the problems your school faces regarding safe routes to your school**

Bowen has an extremely cramped drop-off space in front of the school, too small to even allow for a blue zone as it is shared with bus drop-off and staff parking. In addition, traffic flow and lines of sight are impeded by parent and staff overflow parking, which spills out onto the narrow streets feeding the school. It is not uncommon to see traffic delays and backups in front of the school, as well as increased driver anxiety, disregard for traffic rules, and children exiting vehicles in traffic.

Also, with the proximity to a very congested stretch of Route 9, the neighborhood streets feeding Bowen are often used as cut-through routes for commuters and drivers can be aggressive. High volume, excessive speeds and disregard for school safety all make for dangerous pedestrian crossings.

## 2.2 Participation in SRTS Education and Encouragement

The Bowen School has held the following school sponsored activities as part of the SRTS program:

- Participated in International Walk To School Day;
- Organized five walking school buses (some run weekly, some daily);
- Organized "walk to and from school days," traditionally on Tuesdays;
- Provided group rewards (with some material provided through *MassRIDES*), such as stickers and pencils, and encouraged fun activities and competitions regarding apparel worn by walking students.

## 2.3 Transportation Improvements in Newton

Transportation and traffic control improvements in Newton are under the ultimate purview of the Board of Aldermen. Newton's Department of Public Works and its City Planning and Engineering Departments are tasked with making recommendations to the Aldermen for their adoption prior to implementation. There are a few intersections that are under review by the City in the vicinity of the school; these are discussed below in Section 2.5, Municipal Construction Projects & Recent Studies.

## 2.4 Field Visit

The first SRTS field visit and initial coordination meeting for the Bowen School took place on May 12, 2008, and included a discussion of the current programs employed by the school administration as part of the SRTS program through *MassRIDES* and a discussion of the present needs identified by staff and parents. The following people attended the initial meeting:

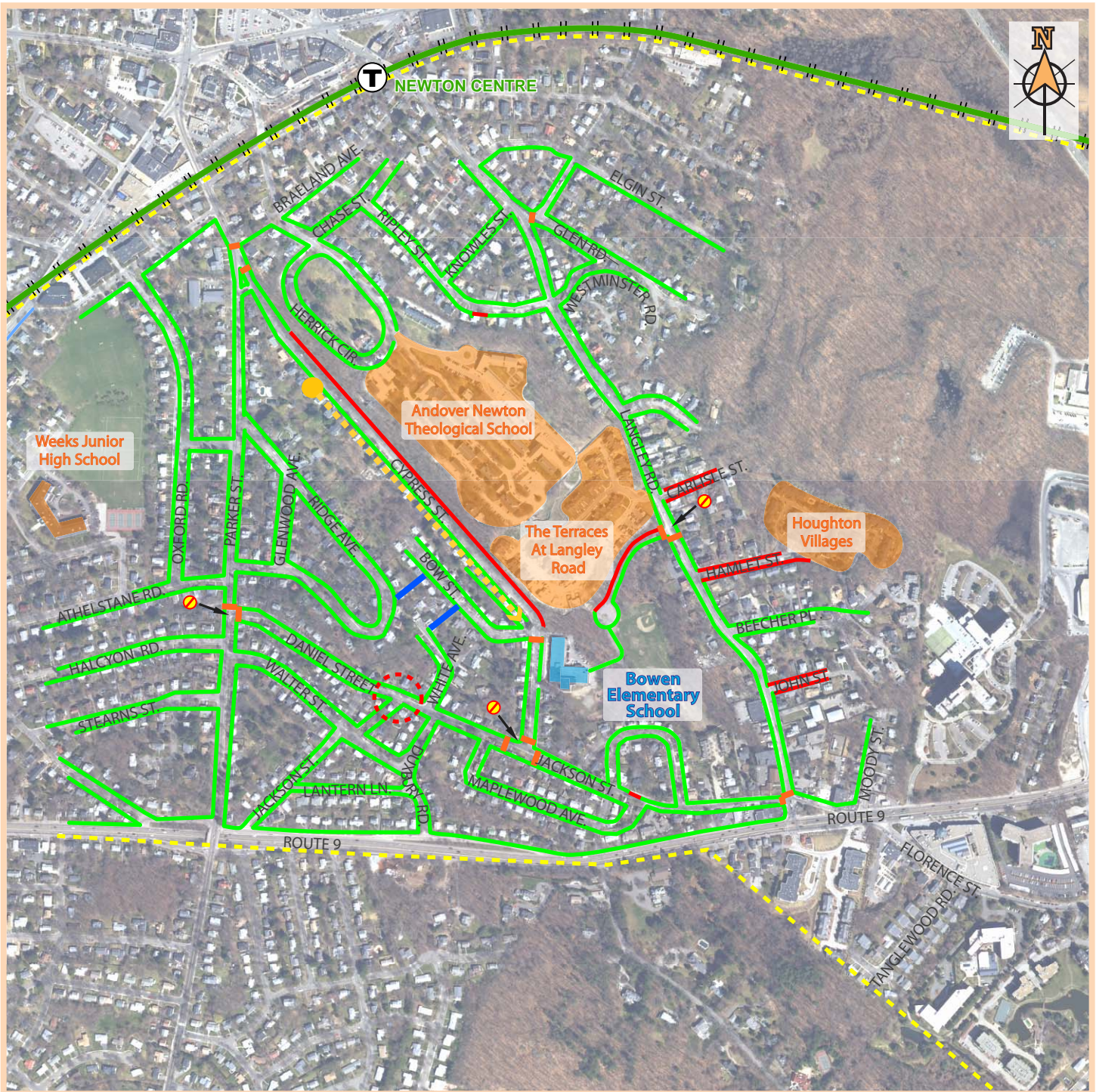
<u>Attendee:</u>	<u>Representing:</u>
Kevin Dandrade, Project Manager	TEC, Inc.
Dr. Patricia Kelly <sup>2</sup>	Principal, Bowen Elementary (2008)
Christine Morrow	<i>MassRIDES</i>
Gretchen Von Grossmann	Von Grossmann & Company
Adam Peller	SRTS Parent Liaison

Additional field visits were performed in June and October 2009 to confirm the construction considerations of the recommended improvements.

Bowen Elementary is situated in a residential neighborhood with closely spaced homes and a generally good walking environment. Most of the streets have sidewalks, as illustrated in Figure 3. The TEC Team concentrated on the roadway crossings; because the sidewalk infrastructure in this section of Newton is extensive, difficult crossings generally act as the barriers to walking and bicycling.

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<sup>2</sup> Dr. Kelly was succeeded by Principal Diana Guzzi in 2009.



1" = 780'

#### KEY

- |  |                          |  |                                |
|--|--------------------------|--|--------------------------------|
|  | Sidewalk                 |  | Walking School Bus             |
|  | No Sidewalk              |  | Location of Temporary Neckdown |
|  | Existing Crosswalk       |  | Path (unpaved)                 |
|  | Crossing Guard           |  | MBTA Green Line (D)            |
|  | School District Boundary |  |                                |

Note: Streets not marked were not observed during the site visit.

**Figure 3: Existing Conditions Around Bowen School**

## 2.5 General Observations

### *School Arrival and Dismissal*

- Generally, students enter the school through the main door on Cypress Street; a teacher must escort a student wanting to enter a different door.
- Pedestrian access is available via a path connecting the school to the Bowen Playground and beyond to Langley Road.
- Drop-off and pick-up activity occurs on Cypress Street in front of the school via a one-way northbound driveway with curb openings of approximately 40 feet at each end.
- Both cars and buses are permitted to use the driveway in the morning for pick-up and drop-off. In the afternoon, the driveway is restricted to buses, although this restriction is not always followed by parents.
- A sidewalk divides the school driveway from the street but is currently used for faculty parking because of insufficient supply of spaces (only 28 parking spots for more than 80 teachers and staff members). There is another parking area (approximately 13 spaces) adjacent to the paved play area northeast of the school.

### *Traffic Patterns*

- Because Cypress Street provides a connection between Newton Center and Route 9, the school staff is concerned about high peak-period traffic volumes.
- There is an established school zone on Cypress Street, with flashing sign assemblies approximately 200 feet north and south of the driveways and “School Zone” pavement markings.
- To the north of the school, Cypress Street has homes and driveways on the west side only. This creates an environment conducive to higher travel speeds, and many motorists appear to be operating above the posted speed limit of 30 miles per hour. Closer to the school, on-street parking helps to slow traffic speeds on Cypress Street.
- Parker Street, located to the west of the school, is a busy arterial roadway that also connects Route 9 with Newton Centre, carrying approximately 15,000 vehicles per day. Because some Bowen School students live west of Parker Street, crossing this busy road presents safety challenges, despite the presence of a crossing guard at Daniel Street. Street trees limit the visibility of pedestrians waiting to enter the crosswalk. Similarly, some tree limbs obstruct traffic signs. Motorists stopped at the stop sign on Daniel Street have difficulty turning onto Parker Street in peak traffic hours. The TEC Team observed long queues on Parker Street when the crossing guard stopped traffic during the peak arrival and dismissal periods.

### *Sidewalk and Pathway Infrastructure*

- North of the school, Cypress Street has a sidewalk only on the west side (on the side opposite the school). In addition, the street curves sharply just to the north of the school. Currently, the school staff encourages students and parents arriving by foot from the north to continue on the west side past the school to cross at Jackson Street, where a crossing guard is posted. This necessitates approximately 800 feet of additional travel to reach the crossing guard. Several students were observed crossing Cypress Street in the area of the sharp curve on Cypress Street opposite Bow Street.
- The crosswalks at Jackson Street and Cypress Street, which are complemented by a crossing guard and stop sign control on the Jackson Street approach, seem to operate safely based on the TEC Team's observations and according to school staff. However, the Jackson Street approaches to the intersection feature closely planted street trees, which limit the visibility of the existing pedestrian warning signs.
- Some limited curb extensions have been proposed for the intersection of Daniel Street and Jackson Street. The City Planning and Engineering Departments staff have indicated that the final design of the curb extensions has not yet been determined. Temporary asphalt curbing was installed several months ago as a demonstration of the curb-extension concept, and is now falling into disrepair.
- The connection from Langley Road through the Bowen Playground and to the school is circuitous, and stretches of sidewalk lack visibility from the street or from school grounds. The path from the school to the playground is an asphalt drive that is steep (not ADA-compliant) and reportedly slippery in winter. The asphalt path continues to the adjacent cul-de-sac where it meets a 4-foot wide concrete sidewalk that leads to Langley Road.
- Although on the edge of the school district, the intersection of Cypress Street and Parker Street near Newton Centre features an inefficient and indirect crosswalk layout for pedestrians. The intersection of the two streets forms an acute angle (approximately 30 degrees), between which is a triangular island whose third leg is a one-way eastbound connection from Parker Street northbound to Cypress Street southbound. If a sidewalk were built on the short one-way lane, it would make the pedestrian movement from the crosswalk to Cypress Street more direct.

### *Municipal Construction Projects & Recent Studies*

- The City has been working with the neighborhood to establish traffic calming measures at the intersection of Jackson Street and Daniel Street. Temporary curb returns have been constructed to define an intersection that is closer to a 90-degree configuration, with Daniel Street eastbound under stop sign control. Another traffic engineering consulting firm, Traffic Solutions, had provided the City with conceptual improvement options, which are discussed further in this assessment report.
- The City performed a review of the warrants for the installation of an all-way stop at the intersection of Jackson Street and Cypress Street in early 2009. It was

determined that the intersection has sufficient traffic control under the existing conditions, whereby only Cypress Street is under stop control.

### *Crossing Guards*

During the 2008-2009 school year, crossing guards were stationed at the following intersections near the Bowen School:

- Cypress Street at Jackson Street,
- Parker Street at Daniel Street, and
- Langley Road at the Bowen Playground driveway.

## **2.6 School/Municipality-Identified Needs/Opportunities**

At the time of the group meeting in 2008, there were two distinct needs that were identified:

- Improve the organization and safety features of the school drop-off area; and
- Improve visibility of crossings and reduce vehicle speeds on approaches to key crossing locations (Parker Street at Daniel Street and Jackson Street at Cypress Street).

Although City staff was unavailable to meet at the time of the initial meeting, TEC followed up with the City Planning and Engineering Departments. There were no specific needs identified for this area other than the previous traffic calming work at the intersection of Jackson Street and Daniel Street.

## **3 Recommendations for Improvement**

As a result of the needs identified in the assessment request, the field assessment, and input from school and City representatives, the TEC Team has identified a number of potential improvements to the pedestrian and bicycling environment in the vicinity of the Bowen School. These improvements are illustrated graphically in Figure 4, and have been divided into those improvements that are recommended for implementation through MassDOT's SRTS infrastructure program (Primary Recommendations) and those that are recommended for potential implementation through other funding sources (Secondary Recommendations).

### **3.1 Primary Recommendations**

The following improvements are recommended as potential infrastructure projects to be built as part of the SRTS Infrastructure program:

#### **Recommendation 1 – Pedestrian Crossing and Refuge Area on Cypress Street**

The principal recommendation includes the construction of a pedestrian refuge area, where pedestrians can wait outside of the traffic stream, and improvements to the crossing of Cypress Street directly in front of the school. The major project elements include:

- Construction of a raised landscape planter with low walls and an 8-10 foot wide

sidewalk.

- Reconstruction of the curb lines for 50-75 feet on the west side of Cypress Street to provide a minor narrowing of the travel ways.
- Installation of bollards to protect the pedestrian space approximately 18 inches inside the curb line.
- Application of pavement markings for a new crosswalk to provide additional sight distance from the current informal crossing location near the school's exit driveway.
- Installation of parking prohibition signs in close proximity to the crosswalk and other traffic control signs associated with the one-way flow of the school driveway.

The preliminary cost estimate for this improvement is approximately \$147,000. See Figure 5 for additional detail and a graphical depiction of the improvements.



**Parker Street at Location of Proposed Sidewalk (Looking South)**

School. The major elements of the project include:

- Reconstruction of existing accessible ramps and construction of new ramps to comply with ADA standards as well as some cement concrete sidewalk approaches to the ramps.
- Removal of the existing crosswalk on Parker Street located at the northerly corner of Daniel Street.
- Application of pavement markings for the new crosswalk on Parker Street.
- Installation of one new mast arm to accommodate signal heads over the middle of Parker Street with one signal post on the opposite side of the street from the mast arm.
- Installation of pedestrian hybrid signal heads with countdown timers and push buttons.
- Installation of signs and pavement markings to complement the new traffic signal and provide warning for the signal operation.

### **Recommendation 2 – Pedestrian Hybrid Beacon and Crosswalk on Parker Street**

In order to provide a consistent level of traffic control for pedestrians seeking to cross Parker Street, the TEC Team recommends installation of a pedestrian hybrid beacon between Daniel Street and Athelstane Road (See Attachment 1 for Data and Warrant Analysis). The proposed traffic signal would help students crossing from the west side of Parker Street to access Bowen School. It will also be used for children on the east side of Parker Street desiring to walk to the Weeks Junior High

A detailed traffic signal warrant analysis will be conducted as part of a Functional Design Report (FDR), which will be completed as part of the 25% / 75% design submission. The impact on traffic flow on Parker Street will be comparable to the use of a crossing guard during peak school arrival and dismissal periods. The preliminary construction cost estimate for this improvement is approximately \$135,500. See Figure 6 for additional detail and a graphical depiction of the improvements.

For the purpose of cost estimating, TEC assumed that all primary projects will be constructed concurrently.

### **3.2 Secondary Recommendations:**

The following are recommended improvements to be implemented by the City or by utilizing other state and federal funding sources.

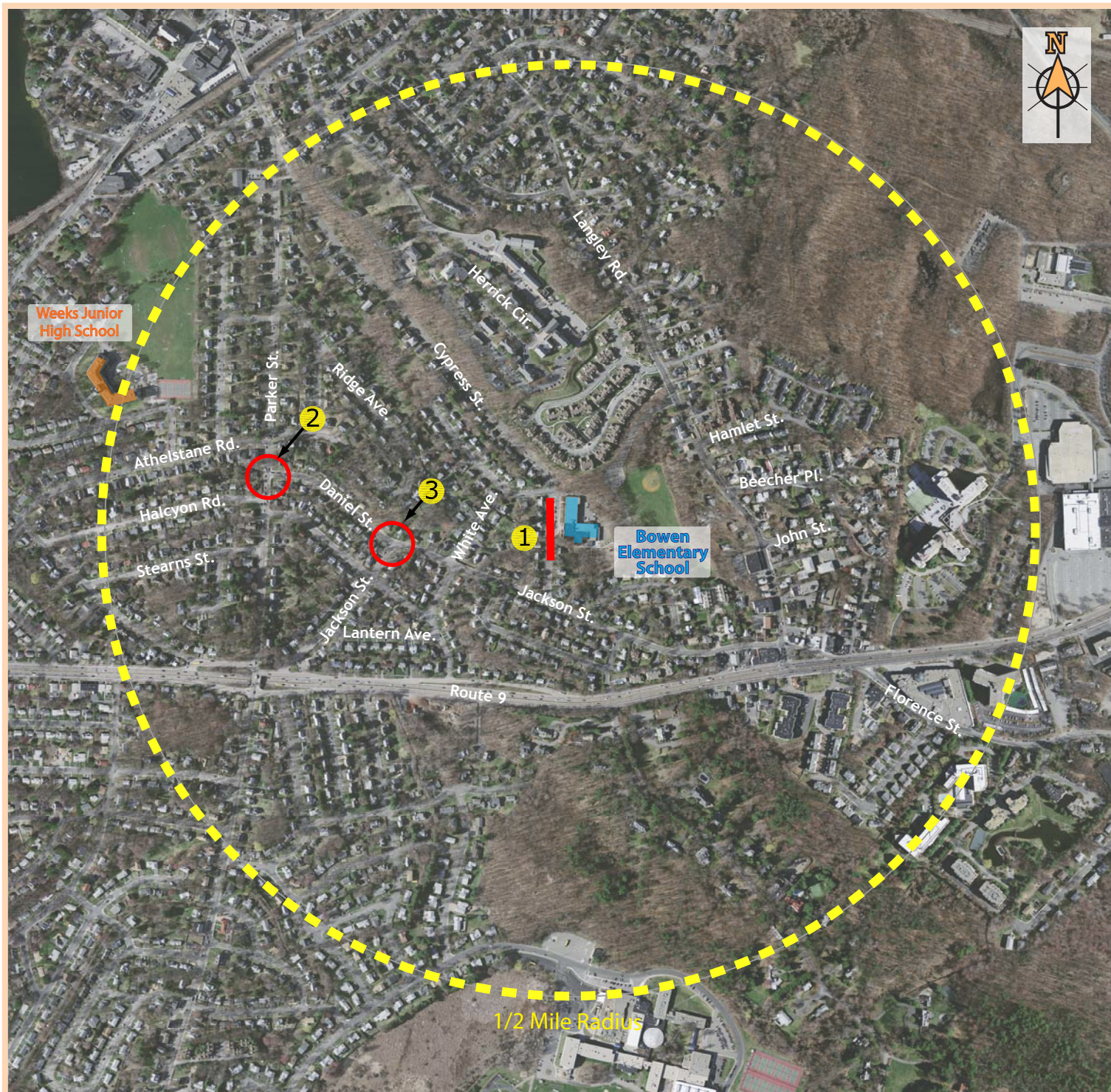
#### **Recommendation 3 – Reconstruction of the intersection of Jackson Street and Daniel Street**

The TEC Team reviewed the conceptual recommendations for traffic calming improvements at the intersection of Jackson Street and Daniel Street based on work previously completed by another consultant for the City of Newton. The temporary asphalt curb lines provide limited benefit for pedestrian operations because the sidewalk locations have not changed. TEC recommends reconstructing the intersection to create an alignment that is closer to 90-degrees, similar to Proposed Alternative 1 dated June 23, 2005 (See Attachment 2).

This concept has merit in its ability to slow vehicle movements to and from Daniel Street. To enhance this recommendation, the City should reconstruct the drainage structures at the face of the new curb line and construct new ADA-compliant ramps. This improvement, if implemented, would shorten the pedestrian movements across Daniel Street and appears to maintain acceptable sight lines.

#### **Additional Maintenance Recommendations:**

- Relocate the school's bike rack from its current location (south side of building in a building alcove not visible from the front or rear of the building) to the southwest corner at the front of the building in a planted area. The bicycle parking would be more secure if visible to people entering and exiting the building, and offers children a shorter route into the building.
- Install new MUTCD-compliant pedestrian warning signs at the intersection of Jackson Street and Cypress Street in new locations that maximize visibility along Jackson Street.



1"=800'

KEY	PROPOSED IMPROVEMENT	FEASIBILITY	SAFETY/ MOBILITY BENEFIT	COST
Potential SRTS Infrastructure Project Recommendations				
1	School Entrance/Cypress Street Crossing	High	High	Low
2	Pedestrian Hybrid Beacon on Parker Street	High	High	Moderate
Recommendations to be Pursued by Town or through Other Funding Sources				
3	Curb Line Bump-Outs at Jackson Street/Daniel Street	High	Low	Moderate

**Figure 4: Location of Recommended Improvements**

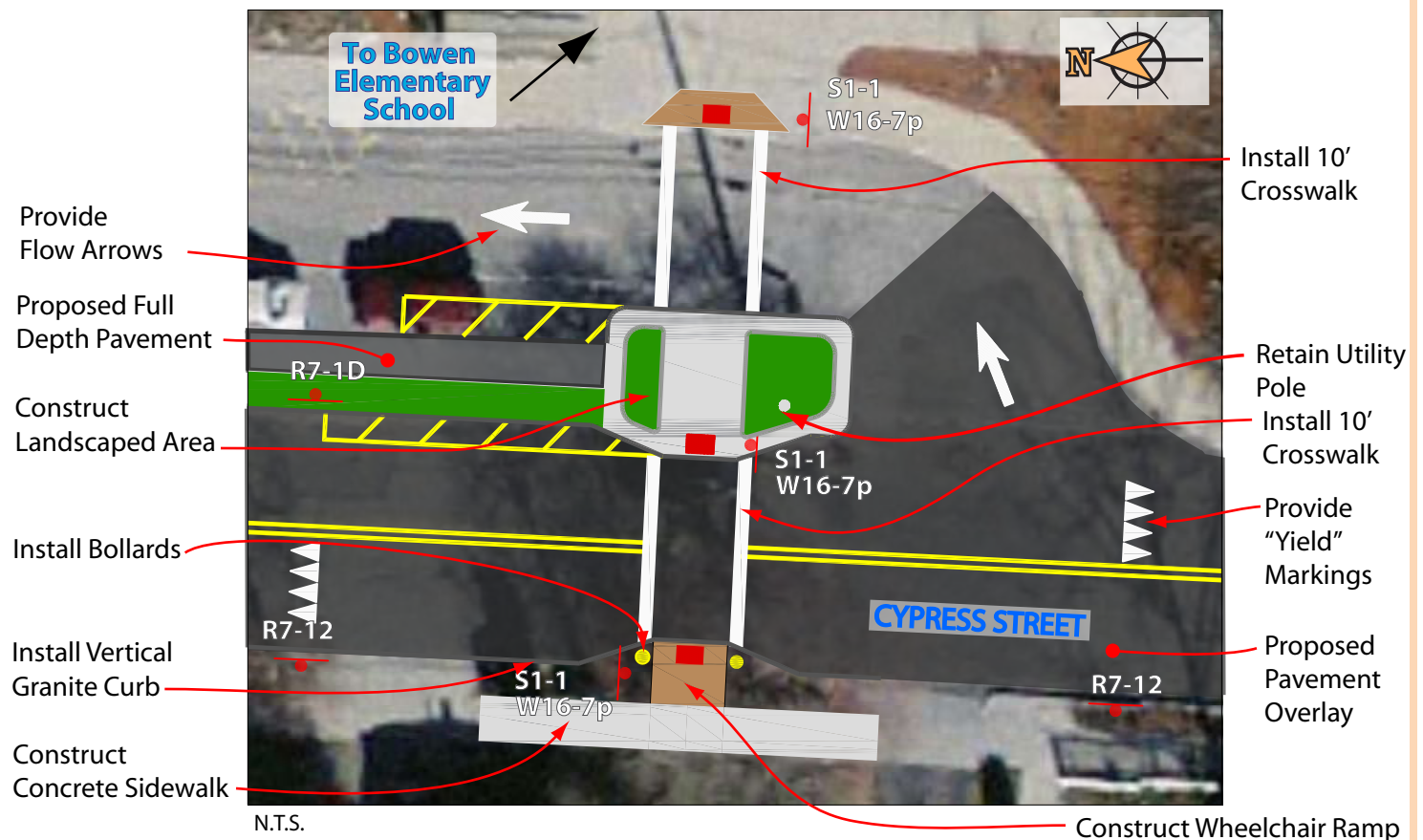
## RECOMMENDED SCOPE OF WORK AND CONCEPTUAL COST ESTIMATE:

ISLAND W/ GRANITE CURBING & CONCRETE SIDEWALK	= \$54,000
DRAINAGE MODIFICATIONS	= \$8,000
PAVEMENT OVERLAY	= \$25,000
SIGNS & STRIPING	= \$4,000
LANDSCAPING/PLANTER WALLS	= \$8,000
BOLLARDS	= \$2,000
TRAFFIC CONTROL/ MOBILIZATION/FIELD OFFICE	= \$16,000
25% CONTINGENCY & CONSTRUCTION ENGINEERING	= \$30,000

**TOTAL = \$147,000**



Rendering of Potential Improvements at Cypress Street and School Entrance



**Figure 5: Recommendation 1- Proposed School Entrance**

## RECOMMENDED SCOPE OF WORK AND CONCEPTUAL COST ESTIMATE:

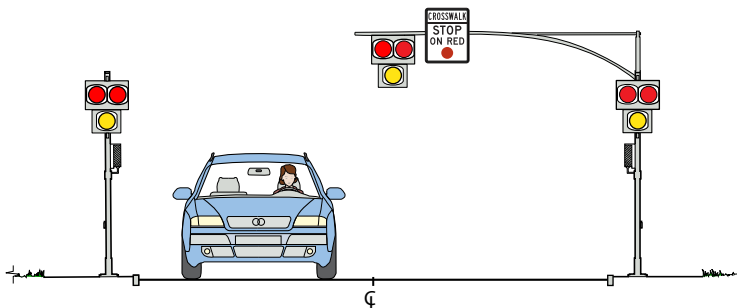
WHEELCHAIR RAMPS/SIDEWALK	=	\$ 20,000
ROADWAY STRIPING & THERMOPLASTIC CROSSWALKS & MARKINGS	=	\$ 6,000
TRAFFIC SIGNS	=	\$ 1,500
PEDESTRIAN TRAFFIC SIGNAL & UNDERGROUND CONDUIT	=	\$ 70,000
LANDSCAPING/TRIMMING	=	\$ 3,000
TRAFFIC CONTROL	=	\$ 8,000
25% CONTINGENCY & CONSTRUCTION ENGINEERING	=	\$ 27,000
<b>TOTAL</b>	=	<b>\$135,500</b>



Pedestrian Hybrid Beacon



Pedestrian Countdown Signal



Reapply Centerline, Edge  
Lines & Crosswalk Markings

Remove Existing Crosswalk

R1-1



W16-9p



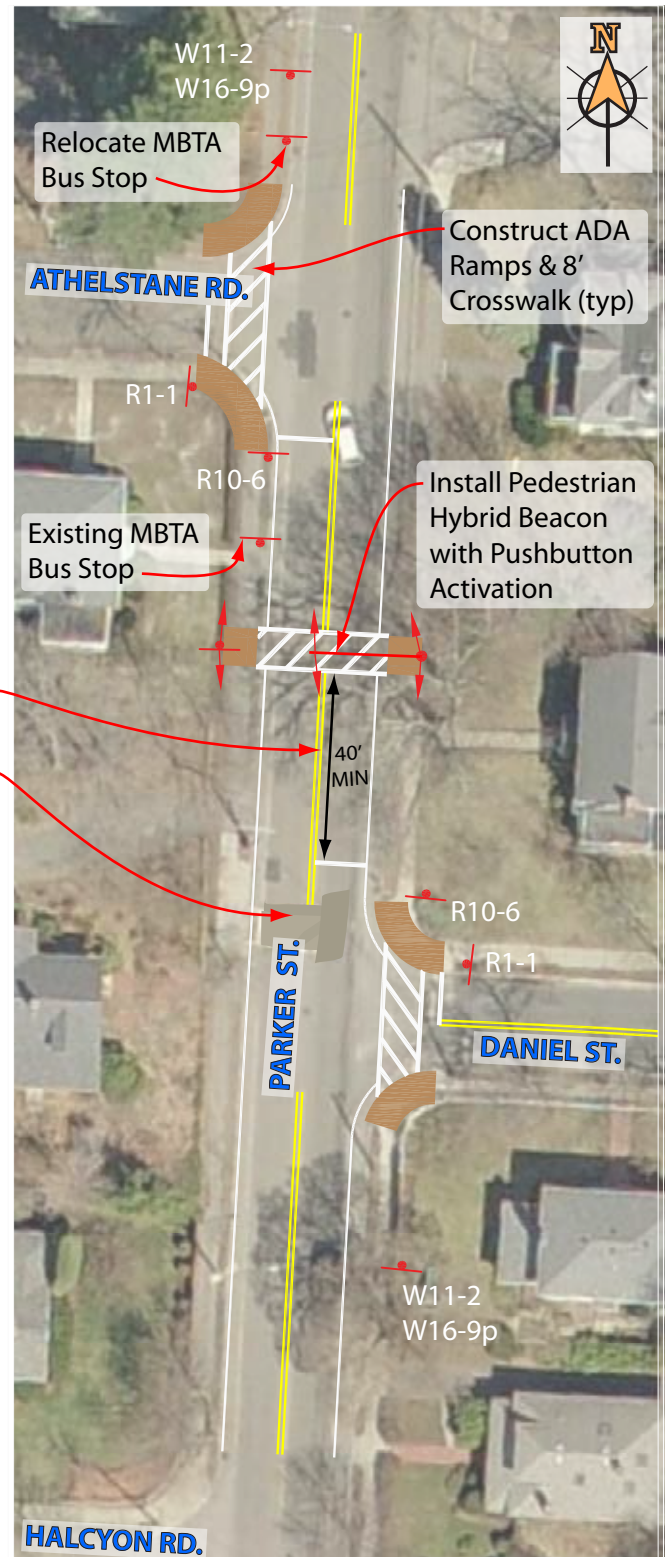
W11-2



R10-6



R10-23



N.T.S.

**Figure 6: Recommendation 2 - Pedestrian Hybrid Beacon on Parker Street**

## 4 Next Steps

MassDOT will finalize this assessment report after receipt of comments from City and school staff. Based on the findings of this and other assessment reports, MassDOT will advance infrastructure improvement projects in those communities where projects are most likely to increase the number of children walking and bicycling to school or substantially improve safety for pedestrians and bicyclists.

In order to successfully complete an SRTS infrastructure project, MassDOT and the City must work together to advance it through the SRTS infrastructure program process, which is illustrated in Figure 7. The Bowen School has completed Step 1, and this report is the culmination of Step 2. The next steps include design and permitting, which are described in greater detail in Section 4.2 below. These steps include schedule projections, which are general guidelines. Schedules can vary depending upon the school calendar (especially summer vacation), ability to reach a consensus on recommended actions, timing of City Council meetings, schedule for the City's right-of-way acquisition, and other factors.

Although the process is comprehensive and can take a significant amount of time, each step is necessary to satisfy requirements for the use of federal money to build these projects. MassDOT and the City each have important responsibilities, as described below. Cooperation and communication between MassDOT and the City will help to make the process move as smoothly and quickly as possible.

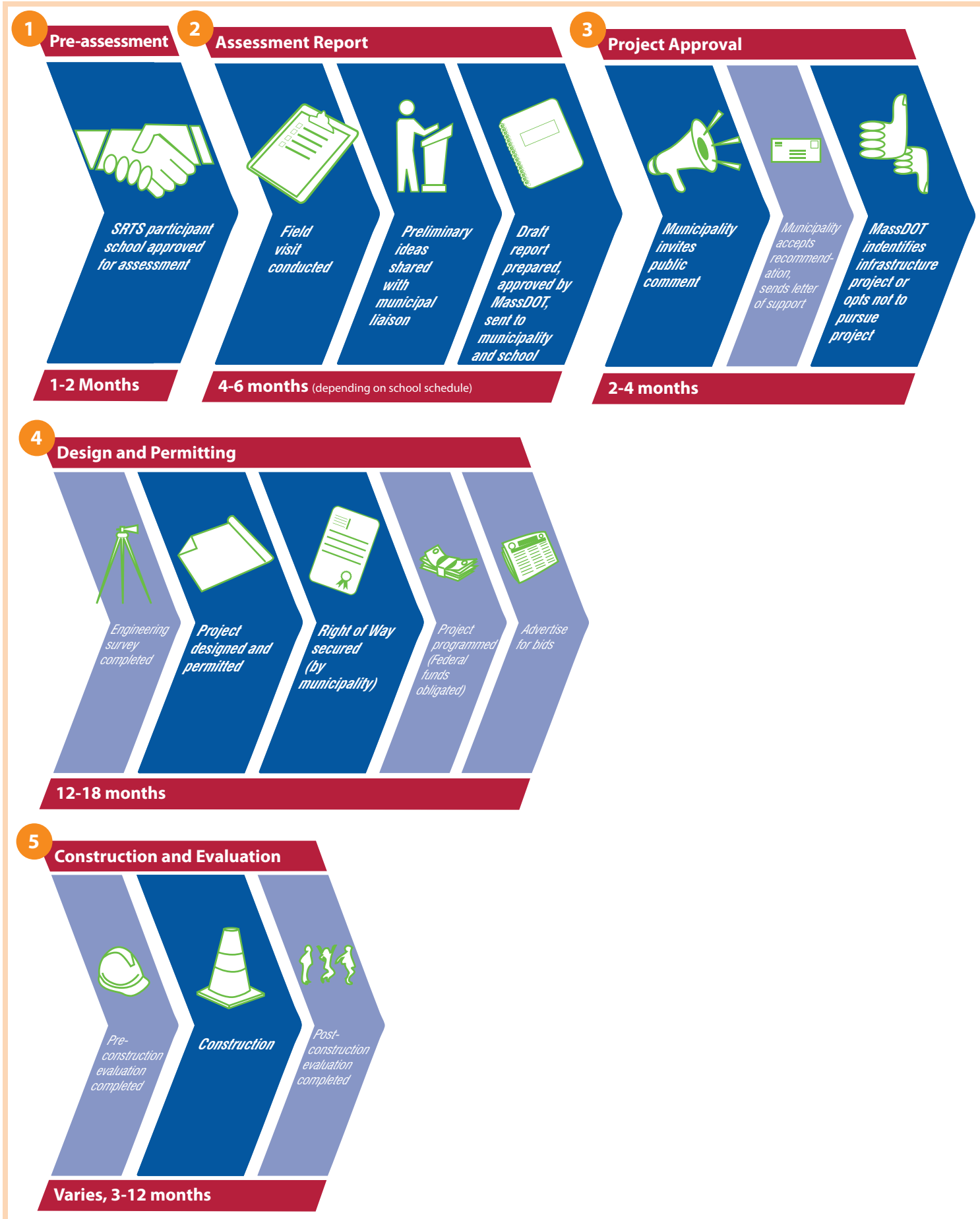
### 4.1 Project Approval (Step 3)

In order to advance the identified projects, the City must formally accept the recommendations in the report, as they may be refined in collaboration with MassDOT and its consultants, with specific emphasis on acceptance of the primary recommendation(s). This formal approval typically follows a vote of the City Council, the results of which are then documented in a letter to MassDOT.

To ensure community support for a proposed project, MassDOT strongly encourages the City to invite public comment from both the project abutters and the school community. Should the City's staff require assistance in presenting the recommendations, a representative of MassDOT or the TEC Team will be available to participate in such a meeting.

Formal acceptance of a project should include:

- Support for the project in its conceptual form
- Acknowledgement of the right-of-way acquisition process and the municipality's assumption of costs associated with legal counsel review and fee takings, if required. Right-of-way requirements are usually limited to narrow strip easements adjacent to the public right-of-way to provide space for a sidewalk; as a result, costs are not usually high.
- Identification of a municipal liaison who will be responsible for leading future design reviews with municipal staff, organizing public meetings, and coordinating the right-of-way acquisition process described below.



**Figure 7: Safe Routes to School Infrastructure Program Process**

## **4.2 Design, Evaluation, and Construction (Steps 4 & 5)**

Once the SRTS infrastructure project is proposed and approved by MassDOT, a project design will be advanced in coordination with MassDOT and the City's municipal liaison. This project design will require conformance with MassDOT's *Project Development and Design Guide*, where applicable.

### **Ground Survey**

The design work will require detailed topographic ground survey and right-of-way layout research to properly locate the proposed infrastructure. The detailed ground survey is needed for any required utility design, including drainage, and to identify and minimize any impacts to the abutting parcels.

### **Right-of-Way Certification (Municipal Responsibility)**

The survey and design process would identify any fee takings and any easements (both temporary and permanent) on private property that are needed for construction. The City will be required to secure all fee takings and easements necessary to complete the project. The identification and legal clearance of the public right-of-way must be completed prior to MassDOT's issuance of a Right-of-Way Certificate, which is necessary to enable the use of federal funds for construction activities as part of the SRTS program. Under a City form of government, the acquisition of land typically requires a 2/3 vote of the City Council or Board of Aldermen. The vote is typically scheduled following the preparation of the Final Right-of-Way Plans.

### **Permitting**

MassDOT will coordinate any necessary Categorical Exclusion (CE) requests as part of National Environmental Policy Act (NEPA) permitting. These permitting elements require coordination with the MassDOT Highway Division's Environmental Section, Right-of-Way Bureau, and relevant District office.

### **Final Design and Programming**

As part of the SRTS program, the MassDOT Highway Division may accept a combined submission at the 25 percent/75 percent design stage in order to expedite the design review process for projects that are primarily associated with new sidewalk construction or reconstruction. Figure 8, presents a *generalized* summary of the steps required as part of the design and permitting process with associated time frames.

### **Construction**

After final plans, specifications, and cost estimates (PS & E) are completed and approved, the MassDOT Highway Division will publicly advertise the project for construction bids. After selection of a construction firm, a contract will be prepared and signed. The Highway Division will oversee the project through the appropriate District office.

Design and Permitting Timeframe		
	Steps	Months
4. Design, Permitting, and ROW Process (Step 4)	<b>1</b> Obtain approval from the MassDOT project review committee (PRC) to initiate a design/construction project with a specific funding program (e.g., Safe Routes to School FY 2011) and project schedule	1-3
	<b>2</b> Complete field survey	1
	<b>3</b> Prepare 25/75% design package & preliminary Right-of-Way plan Send early environmental coordination letters Conduct an early coordination meeting with the municipality to review the current design and address any comments.	2
	<b>4</b> Obtain MassDOT/municipal review of 25/75% design Conduct a ROW coordination meeting with the municipality to review the ROW acquisition process.	2
	<b>5</b> Schedule, advertise, and conduct design public hearing	< 2
	<b>6</b> Respond to comments, prepare 100% design and final Right-of-Way plans Obtain environmental permits (if required)	1-2
	<b>7</b> Obtain MassDOT/municipal review of 100% design Municipality acquires takings and easements	1-2
	<b>8</b> Prepare PS&E plan package for final review and advertisement; Project programmed (Federal funds obligated)	1-2
5. Advertising, & Construction	<b>9</b> MassDOT advertises project to solicit construction bids	1-2
	<b>10</b> MassDOT prepares construction contract and issues contractor's Notice to Proceed	2-3
Total Approximate Design & Permitting Schedule		14-21

**Figure 8: Safe Routes to School Infrastructure Program Design and Permitting Timeframe**

## **Pre-and Post-Construction Evaluation**

To quantify the benefits of the project, pre-construction and post-construction evaluations will be undertaken by MassDOT.

For additional information about the SRTS Infrastructure Program or to provide written comments on this Preliminary Assessment, please contact:

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This report was prepared by the TEC, Inc. team:



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the COLLABORATIVE

Planners Collaborative  
Design Collaborative  
Communications Collaborative



**von grossmann & company**  
urban design architecture planning communications

Project: SRTS Parker Street Pedestrian Hybrid Signal  
 Town: Newton, MA  
 TEC # T0233  
 Analyst: TEC / K. Dandrade  
 85th Percentile > 40 mph? **N**  
 Population < 10,000 people? **N**



# ATTACHMENT 1

## **Warrant 1** - One of the Following Conditions Must Be Met for any 8 hours of an average day (Table 4C-1)

### **Individual Option:**

Condition A: Minimum Vehicular Volume  
 100%

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	500	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	150	57	87	37	27	21	36	23	39	65	64	90	56
Met?			NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

**OR**

Condition B: Interruption of Continuous Traffic  
 100%

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	750	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	75	57	87	37	27	21	36	23	39	65	64	90	56
Met?			NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO

Result: **NO**

### **Combination Option:**

Condition A: Minimum Vehicular Volume  
 80%

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	400	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	120	57	87	37	27	21	36	23	39	65	64	90	56
Met?			NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

**AND**

Condition B: Interruption of Continuous Traffic  
 80%

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	600	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	60	57	87	37	27	21	36	23	39	65	64	90	56
Met?			NO	YES	NO	NO	NO	NO	NO	NO	YES	YES	YES	NO



Result: **NO**

**Warrant 2 - Four-Hour Vehicular Volume (must be met for any 4 hours of an average day)**

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	Figure 4C-1	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	Figure 4C-1	57	87	37	27	21	36	23	39	65	64	90	56
		Met?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO

Result: **NO**

**Warrant 3 - Peak Hour Volume (must be met for 1 hour of an average day)**

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	Figure 4C-3	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Minor	1	Figure 4C-3	57	87	37	27	21	36	23	39	65	64	90	56
		Met?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Result: **NO**

**Warrant 4 - Pedestrian Volume**

Condition 1: Must be met for any 4 hours of an average day)

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	0	Figure 4C-5	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Peds	Result:	Figure 4C-5	20	54	5	1	3	4	3	7	87	19	40	8
		Met?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Result: **NO**

**OR**

Condition 2: Must be met for 1 hour of an average day)

Street	Lanes	Minimum Volume	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
Major	1	Figure 4C-7	1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
Peds	0	Figure 4C-7	20	54	5	1	3	4	3	7	87	19	40	8

[illegible]

Result: NO

## **Warrants 5: - School Crossing**

Assume: Length of crosswalk is 34'

AM Distribution: 36% Directional distribution to North, 64% to South

PM Distribution: 57% Directional distribution to/from North

3.5' travel distance per second

Result: YES

## Warrants 6 to 8: Not Evaluated

**Assumptions:**

1. Right turning traffic from the site was discounted by 50% on the minor street approach.

# Pedestrian Hybrid Beacon Warrant Analysis - Pedestrian Volume (based on 34' crosswalk)

**Condition 1: Must be met for any 4 hours of an average day)**

Result: NO



Based simply on posted speed limit of 30mph.

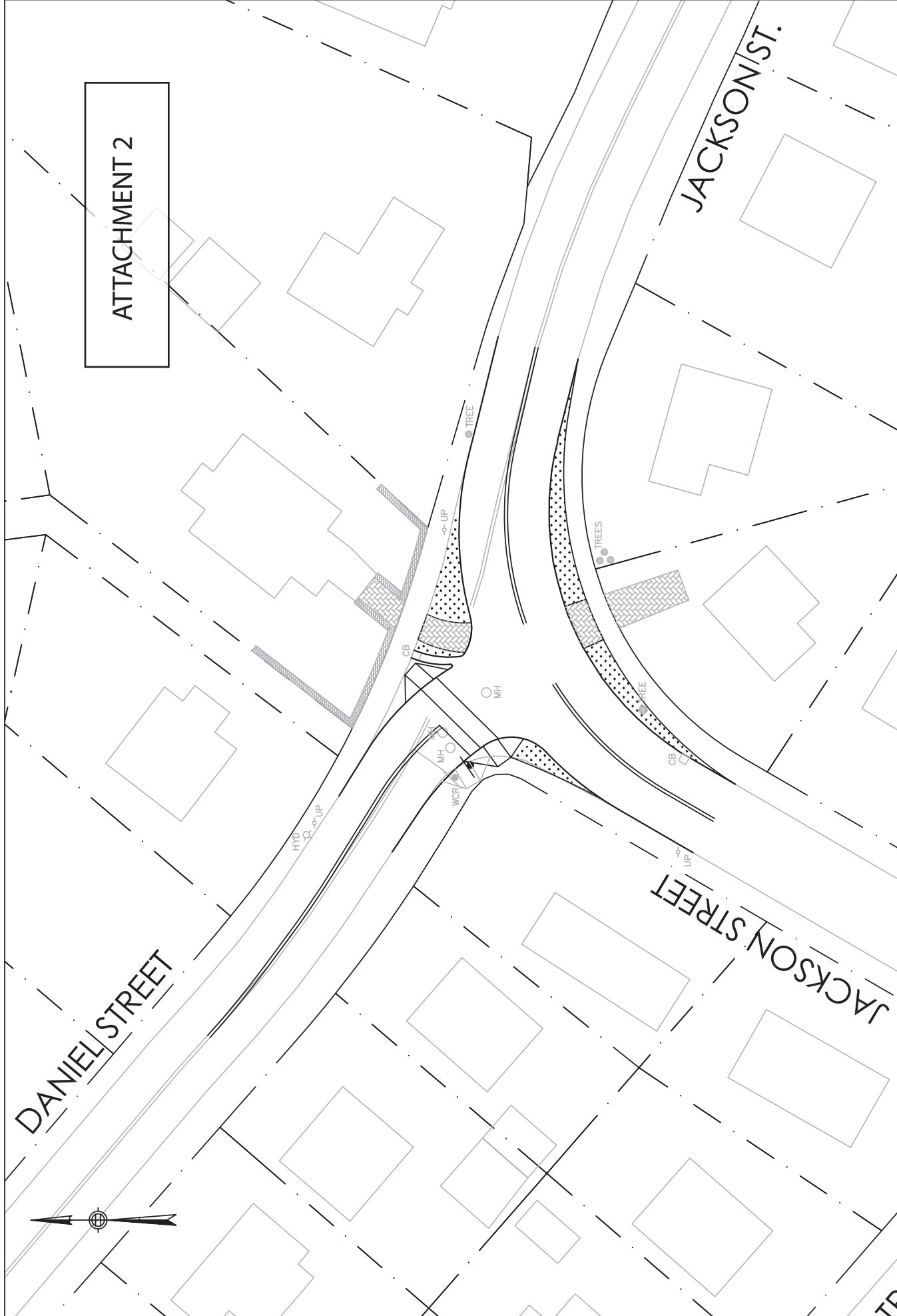
OR

**Condition 2: Must be met for 1hour of an average day)**

Street Major Peds	Lanes	Minimum Volume Figure 4F-2 Figure 4F-2	TMC Data											
			7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM
	1		1305	1281	887	741	764	806	783	1048	1159	1136	1306	1268
	0		20	54	5	1	3	4	3	7	87	19	40	8
		Met?	YES	YES	NO	NO	NO	NO	NO	NO	YES	NO	YES	NO

Result: YES

The posted speed limit is 30mph. TEC observed speeds in excess of 35mph outside the peak hours.



ATTACHMENT 2

<b>TRAFFIC SOLUTIONS, LLC</b> Planning, Permitting, & Design 385 Concord Avenue, Suite 205 Belmont, Massachusetts 02459-3037	<b>PROPOSED ALTERNATIVE 1</b> "T" INTERSECTION DESIGN	<b>PROJECT:</b> DANIEL STREET AT JACKSON STREET NEWTON, MASSACHUSETTS	<b>PREPARED FOR:</b> <b>CITY OF NEWTON</b> DEPARTMENT OF PLANNING AND DEVELOPMENT 1000 Commonwealth Avenue Newton, Massachusetts 02459	DESIGN BY:	—
				DRAWN BY:	TMB
				CHECK BY:	WFL
				DATE:	6/23/05
				SCALE:	N.T.S.
				DRAWING NO.:	1 OF 1